Sources of Unclassified Information on U.S. Government Research and Development

February 1967

OFFICE OF NAVAL RESEARCH
DEPARTMENT OF THE NAVY
Washington, D.C. 20360

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Foreword

1. This pamphlet contains a summary of readily available sources of unclassified U. S. Government Research and Development information together with a brief discussion of the recently adopted microfiche system designed to reduce the volume, weight and cost of U. S. Government reports and other documents.

2. These sources of information may be procured as described herein; the Office of Naval Research is not authorized to distribute them.

3. This pamphlet was prepared by the Office of Naval Research (Mr. Charles DeVore).

JOHN K. LEYDON
Rear Admiral, USN
Chief of Naval Research

Sources of Unclassified Information on U.S. Government Research and Development

A basic philosophy of the United States Government has been—and is—that information generated at the taxpayers' expense should be given the widest possible dissemination to those taxpayers, and in fact, to the citizens of the Free World.

Limitations on such dissemination are imposed only when necessary:

a. to protect the national security, or
b. to protect proprietary rights not protected by patents, or
c. to minimize the liability of the U. S. Government or its employees, or
d. to protect information regarding the relative merits of commercial products.

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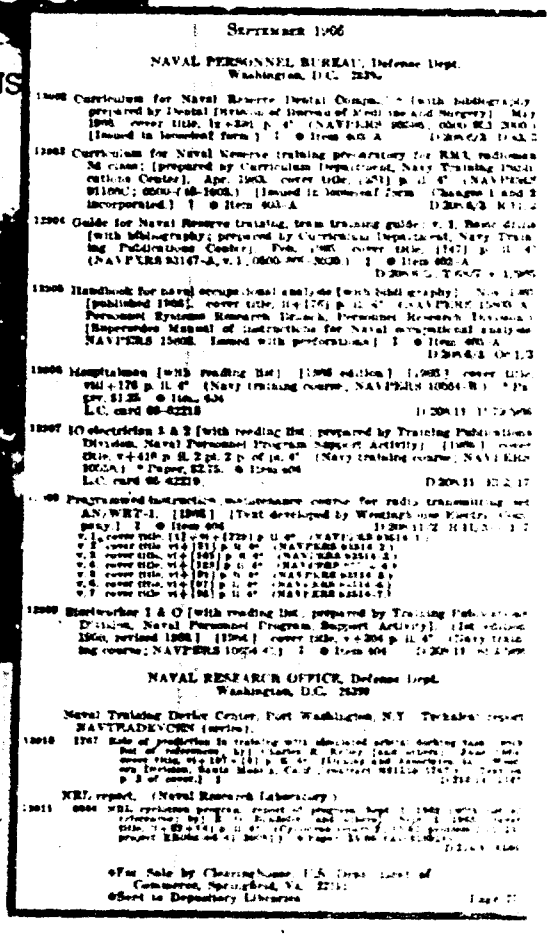
Within the Federal Government, the Superintendent of Documents is the sales agent for United States Government publications, most—if not all—of which are printed by the Government Printing Office, the largest and best-equipped printing plant in the world.

One publication available from this source is the Monthly Catalog of United States Government Publications, for sale by the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. 20402. Price, 50 cents per copy (except December—Index issue, which varies in price). Subscription price, $4.50 per year (including index issue); $1.50 additional for foreign mailing.



MONTHLY CATALOG

UNITED STATES
GOVERNMENT PUBLICATIONS

SEPTEMBER 1966

Entries 12577-14097

SEPTEMBER 1966

NAVAL PERSONNEL BUREAU, Defense Dept.
Washington, D.C.

NAVAL RESEARCH OFFICE, Defense Dept.
Washington, D.C.

As the title indicates, this is a comprehensive listing, including Federal research and development reports, but not limited to such reports. In the following paragraphs, information will be given on publications limited to research and development.

Clearinghouse for Federal Scientific and Technical Information

The Clearinghouse for Federal Scientific and Technical Information of the U. S. Department of Commerce provides a single point of contact in the Federal Government through which current research efforts and the unclassified results of Government-sponsored research in science and technology are made available to industry, commerce and the general public, and provides for a central service for the translation of certain foreign technical documents.

U. S. Government Research and Development Reports, issued twice a month, announces the availability of new reports of U. S. Government-sponsored research and development released by the Department of Defense, the Atomic Energy Commission, National Aeronautics and Space Administration and other agencies. It also lists current Government-sponsored R&D projects. Sold by the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C., 20402. Annual subscription, $30 ($7.50 additional for foreign mailing).

A consolidated index, Government-Wide Index to Federal Research and Development Reports, is published monthly by the Clearinghouse. It is sold by the Superintendent of Documents for $22 a year ($5.50 additional for foreign mailing).

Technical Translations announces to the public the availability and provides order information for translated scientific and technical reports, periodicals and books. Although most of the literature has been translated into English, some is in other Western European languages. It is issued twice a month by the Clearinghouse in cooperation with the Special Libraries Association Translations Center and the European Translations Centre. It is sold by the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. 20402. Annual subscription $12 ($4 additional for foreign mailing).

U.S. GOVERNMENT
RESEARCH
& DEVELOPMENT
REPORTS

PYROLYSIS OF BETA-PARTS XVI. A MECHANISTIC STUDY OF THE PYROLYSIS OF 2-BETA-HYDROXYALKYL PYRIDINES.
by Ernest H. Smith and Brian L. Yates. 29 Dec 64. 6p. Contract AF AFOSR 62-268, Proj AF-9767, Task 976707, AFOSR 66-0767.
Unclassified report

See also AD-614 474.

Submitted for publication in the Journal of the Chemical Society (London) 242 A Dec 1965. Copies to DDC outside.

Descriptors: (*Pyridine: Reaction kinetics), (*Alcohols: Pyrolysis), (*Alkenes: Pyrolysis), Molecular structure, Chemical bonds, Molecular orbitals, Esters, Heat of activation

The pyrolysis of beta-hydroxyalkyl pyridines to alkenes and alkanal compounds was shown to be a first order homogeneous unimolecular reaction. Alkyl groups at the 1 position of beta-1-C6 H5 had have much less effect on the rate of pyrolysis than when they are in a structurally similar position of ethyl derivatives. This implies that there is less heterolytic splitting of the C-C H OH bond in beta hydroxyalkyl pyridines in the transition state than C-O splitting in esters pyrolysis. A 3 phenyl substituent on beta-1-C6 H5 increases the rate of pyrolysis more than similar substitution in ethyl formate. Apparently there is greater use of the π electrons in the transition state pyrolysis of beta hydroxyalkyl pyridines than in ester pyrolysis. Tertiary alcohols decompose more readily than secondary and primary alcohols. A comparison of the entropies of activation indicates that tertiary alcohols react in a more favourable conformation for the trial decomposition than the primary alcohols. (Author)

AD-632 993 Pbl. 7/3
CFSTI Prices: HC $1.00 MF $0.50
ARSENICALS PROLIFIC SEAL
MICROBIOLOGICAL ASSAYS ON PHOSPHORIC ACID DISTILLATE.
Quarterly rept no 5, 1 Sep 65 30 Apr 66.
by J. O. Edwards, M. J. Bullen, H. J. Bruns, and R. A. DiPerna. 30 Apr 66. 14p. Contract DA-18-035-AMC-274(A).
Unclassified report

Descriptors: (*Phosphorus acids: Displacement reactions), (*Hydroxamic acids: Displacement reactions), (*Amines: Displacement reactions), Fungi, Organic phosphorus compounds, pH, Reaction kinetics, Nitrogen cycle compounds

Data on the reaction of p nitrophenyl methylphosphonate with a variety of hydroxamic acids is reported and discussed. Various experimental difficulties served to limit the number of successful trials. An attempt to obtain Brønsted plot for the observed data showed a small dependence upon the basicity of the hydroxamic acid. Consideration is also given to the reaction of p nitrophenyl methylphosphonate with a series of tertiary amines. A Brønsted plot of amine pKa vs log K2 (second order rate constant) has a slope of 0.31. It was also observed that only highly basified amines gave consistent rate data. A small rate enhancement was noted with an increase in ionic strength. (Author)

AD-631 951 See Pbl. 11/6

AD-631 973 See Pbl. 20/5

AD-631 995 See Pbl. 6/1

AD-632 035 See Pbl. 11/10

AD-632 065 See Pbl. 7/2

AD-632 084 See Pbl. 7/4

AD-632 328 See Pbl. 7/4

AD-632 329 See Pbl. 7/4

AD-632 418 See Pbl. 7/2

AD-632 440 See Pbl. 7/2

7/4. PHYSICAL CHEMISTRY

AD-631 888 Pbl. 7/4, 9/2
CFSTI Prices: HC $2.00 MF $0.50
MALLINCKRODT CHEMICAL LAB HARVARD UNIV CAMBRIDGE MASS
A GENERAL PROGRAM FOR THE CALCULATION OF INTERNAL ROTATION SPLITTINGS IN MICROWAVE SPECTROSCOPY.
Technical research rept.
by Robert C. Woods. 1964. 10p. Contract None (EAC 114).
Unclassified report

Descriptors: (*Programming, (*Computers), (*Molecular rotation), (*Microwave spectroscopy, Molecular rotation), Hamiltonian, Molecular spectroscopy, Quantum mechanics, Programming languages

A theoretical basis is presented for a computer program which has been written to calculate the internal rotation splittings on the microwave spectra of molecule, possessing a hindered internal symmetric top. This is an extension of the internal axis method and is applicable to a very general case, which includes any high barrier problem which is not a near spherical top. Any asymmetry, any geometry, and any size top can be handled by the program as it stands. The method involves the diversion of the Hamiltonian into a rotational part and a part involving internal rotation, the latter including the coupling between internal and overall rotation. The matrix elements of these parts are set up separately, each in the most convenient basis, then transformed to a quantum basis symmetric rotor in principal axes, then to the Wang basis, and finally to the basis which diagonalizes the (large) rigid rotor part. The small off diagonal elements which are left are treated by perturbation theory. This procedure has been incorporated in an efficient Fortran program which uses fully the various symmetry properties. (Author)

AD-630 926 Pbl. 7/4, 11/6, 20/13
CFSTI Prices: HC $1.00 MF $0.50
NAVAL RESEARCH LAB WASHINGTON DC
PARAMETERS CONTROLLING SOLUBILITY IN DILUTE LIQUID METAL SYSTEMS.
Memo rept.
by S. W. Simons. Sep 61. 10p. Rept no NRL MR 1201.
Proj RR 007-01-46-5411.
Unclassified report

See also AD-136 951.

Descriptors: (*Liquid metals, Solvent extract), Atomic structure, Solubility, Thermodynamics, Rubidium, Cesium, Containers

Solubility coefficients, B at -17 degrees K = B at long intervals, from both solute (cesium 137 degrees K plots for 37 binary systems were correlated with the atomic size factor which was defined as the ratio of the atomic radius of the solvent atom divided by the atomic radius of the solute atom. The results suggest that like the temperature coefficient of solubility, the solubility coefficient is strongly dependent on the disparity in the atomic radius of solvent and solute atoms. On the basis of these results, bearing in mind the still preliminary status of the correlations, suggestions were made regarding possible alternate materials for liquid Rb and liquid Cs. (Author)

AD-630 999 Pbl. 7/4
CFSTI Prices: HC $1.00 MF $0.50
PRICE CHEMICAL LAB PRINCETON UNIV NJ

INFRARED AND RAMAN SPECTRA OF CARBON SUBOXIDE IN CONDENSED PHASES.
Technical rept.
by Wm. Hayden Smith and George E. Leroi. Jan 66. 4p. Rept no TR-2.
Contract None (EAC 61). Proj NR 051-656.
Unclassified report

Prepared for publication in the Journal of Chemical Physics

Descriptors: (*Carbon compounds: Spectra (Infrared)), (*Raman spectroscopy: Carbon compounds), Oxides, Liquids, Crystals

Infrared and Raman spectra of liquid, crystalline and melted carbon suboxide have been obtained in the region 20 to 4000 cm. A previously unreported solid solid transition has been observed at 115 deg. at minus 5 K and possible structures for both crystalline phases have been inferred from the spectroscopic results. The point central carbon bending mode nu (7) has been identified in the liquid phase at 72 plus or minus 2 cm. The problem of disappearing nu bands is discussed, and a revised vibrational assignment and force constant analysis for carbon suboxide is presented. (Author)

AD-632 000 Pbl. 7/4
CFSTI Prices: HC $1.00 MF $0.50
PRICE CHEMICAL LAB PRINCETON UNIV NJ
CORRELATION OF ELECTRONIC STRUCTURE AND BINDING FORCE CONSTANTS IN SOME LINEAR MOLECULES.
Technical rept.
by Wm. Hayden Smith and George E. Leroi. Feb 66. 14p. Rept no TR-4.
Contract None (EAC 61). Proj NR 051-656.
Unclassified report

Submitted for publication in the Journal of Chemical Physics

Descriptors: (*Polyatomic molecules: *Carbon compounds), Carbon dioxide, Molecular structure, Molecular orbitals, Bonders, Hydrogen compounds, Sulfides, Valence, Electron density

A qualitative relationship between electron density in about the central carbon atom and cost of bending is described for several triatomic and pentatomic linear molecules, including CO2, CS2, N2O, CHF2, CN2, CO2, CS2 and CH4. Both valence bond and molecular orbital models are discussed. (Author)

AD-632 003 Pbl. 7/4
CFSTI Prices: HC $2.00 MF $0.50
PRICE CHEMICAL LAB PRINCETON UNIV NJ
THE INFRARED AND RAMAN SPECTRA OF CARBON SUBOXIDE.
Technical rept.
by Wm. Hayden Smith and George E. Leroi. Feb 66. 24p. Rept no TR-3.
Contract None (EAC 61). Proj NR 051-656.
Unclassified report

Submitted for publication in the Journal of Chemical Physics

Descriptors: (*Carbon compounds: Spectra (Infrared)), (*Raman spectroscopy: Carbon compounds), Sulfides, Spectra, Molecular structure (Infrared)

Infrared and Raman spectra of [illegible] carbon suboxide [illegible] are presented. [illegible] Descriptors [illegible] (Author)

TECHNICAL TRANSLATIONS

Order from CFSTI or ETC: HC$1.00, MF$0.50 as TT-66-33300

E. Animal husbandry

TT-66-30190 Field 2E, 13J

CUBAN TRANSLATIONS NO. 253, 30 Jun 66, 17p, JPRS-37758.
Order from CFSTI or ETC: HC$1.00, MF$0.50 as TT-66-30190

TT-66-33367 Field 2E, 2A, 6C, 6O

COMMUNIST CHINESE SCIENTIFIC ABSTRACTS: AGRICULTURAL SCIENCES AND TECHNOLOGY NO. 12. Collected Papers of Third All-China Symposium on Antibiotics, Vol. 4, Applications of Antibiotics in Agriculture and Animal Husbandry, 13 Jun 66, 24p, JPRS-37963.
Order from CFSTI or ETC: HC$1.00, MF$0.50 as TT-66-33367

TT-66-33230 Field 2F, 6C

Horvath, Z.
DEVELOPMENT OF VETERINARY INTERNAL MEDICINE OVER THE PAST 30 YEARS IN HUNGARY, 27 Jun 66, 12p, JPRS-36193.
Order from CFSTI or ETC: HC$1.00, MF$0.50 as TT-66-33230

Trans. of Magyar Allatorvosok Lapja (Hungary) n3 p97-100 1966.

TT-66-32730 Field 2E, 2B, 2A, 6C

EAST EUROPEAN AGRICULTURE, FORESTRY, AND FOOD INDUSTRIES TRANSLATIONS NO. 461, 1 Jul 66, 34p, JPRS-34304.
Order from CFSTI or ETC: HC$1.00, MF$0.50 as TT-66-32730

TT-66-33170 Field 2E

COMMUNIST CHINESE SCIENTIFIC ABSTRACTS: BIO-MEDICAL SCIENCES NO. 130. Chinese Veterinary Journal, 20 Jul 66, 34p, JPRS-34720.
Order from CFSTI or ETC: HC$1.00, MF$0.50 as TT-66-33170

F. Forestry

TT-66-60041 Field 2F, 6C

Ovsyanitin, V. K., Sorlok, Ya. S.
DENSITY OF PINE PLANTATIONS AND ITS BIOLOGICAL AND SILVICULTURAL SIGNIFICANCE (Gustota kultur sosny i ee biologiko-lesovodstvennoe znachenie), 1966, 43p, 32refs, 6/CSS-Agr(TT-66-60041).
Order from CFSTI: $2.00 as TT-66-60041

Trans. of Akademiya Nauk SSSR, Institut Lesokhozyaistvennykh Problem, Kiev. Trudy, n1: p121-62 1966.

TT-66-31066 Field 2F, 6C

Sokmarov, A. A.
INTERRELATIONSHIPS OF TALL AND SHRUB SPECIES IN FIELD-PROTECTIVE FOREST PLANTATIONS (O Vzaimodeistvii vysokikh i kustarnikovykh

Period v Zashchitnykh Lesonasazhdeniyakh), 1964, 7p, 5/CSS-Agr(TT-66-31066).
Order from CFSTI, HC $1.00, as TT-66-31066

Trans. of Agrobiologiya (USSR) n2 p253-7 1966.

03 ASTRONOMY AND ASTROPHYSICS

A. Astronomy

TT-66-61660 Field 3A, 3C

Sorokin, N. A.
RELATIVE ORIENTATION OF THE EARTH'S EQUATOR AND THE LUNAR ORBIT IN THE DISTANT PAST, 6 May 66, 13p, 6refs, BSK-144; AD-634 941.
Order from CFSTI or ETC: HC$1.00, MF$0.50 as AD-634 941

Trans. of Astronomicheskii Zhurnal (USSR) v43 p1070-4 1966.

B. Astrophysics

TT-66-32825 Field 3B

COMMUNIST CHINESE SCIENTIFIC ABSTRACTS: EARTH SCIENCES NO. 51, 11 Jul 66, 18p, JPRS-36313.
Order from CFSTI or ETC: HC$1.00, MF$0.50 as TT-66-32825

TT-66-61116 Field 3F

Kalterfield, G. N.
THE QUESTION OF THE TECTONIC ORIGIN OF LINEAR FORMATIONS ON MARS. Tr. by E. R. Hope, Apr 66, 27p, 20refs, DRB-T-643-R; AD-631 056.
Order from CFSTI or ETC: HC$1.00, MF$0.50 as AD-631 056

Trans. of Vsesoyuznoe Geograficheskoe Obshchestvo, Izvestiya (USSR) v91 n3 p173-83 1959.

04 ATMOSPHERIC SCIENCES

A. Atmospheric physics

TT-66-64726 Field 4A, 3C

Mikhaeda, D. W.
THE LOWEST ELECTRON DENSITY RECEIVED FROM WAVE REFLECTION FROM THE IONOSPHERE (Nizkaya E), 1 Dec 66, 7p, 4refs, ATD-66-100; AD-634 663.
Order from CFSTI or ETC: HC$1.00, MF$0.50 as AD-634 663

Trans. of Bolgarska Akademiya na Naukite, Sofia, v18 n7 p631-4 1966.
Dept. of Survey of Scientific and Technical Literature.

TT-66-60664 Field 4A

Lebedev, T. V.
INTERACTIVE CONNECTION OF THE ELECTRIC FIELD OF THE ATMOSPHERE WITH AURORA PHENOMENA, 21 Oct 66, 10p, 10refs, FTD-TT-65-416; AD-634 637.
Order from CFSTI or ETC: HC$1.00, MF$0.50 as AD-634 637

Condensed rough draft trans. of Geomagnetizm i Aeronomiya (USSR) n13 p36-44 1965.

National Aeronautics and Space Administration

Scientific and technical reports of the National Aeronautics and Space Administration and its contractors are covered in Scientific and Technical Aerospace Reports (STAR), published twice a month. It is a comprehensive abstracting and indexing journal covering worldwide report literature on the science and technology of space and aeronautics. It is sold by the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. 20402. Annual subscription rate, $33.00 domestic; $42.00, foreign.

By agreement between NASA and the American Institute of Aeronautics and Astronautics, the AIAA publication International Aerospace Abstracts is issued in coordination with STAR. Each journal appears on alternate weeks. IAA's worldwide coverage of books and scientific and trade journals complements STAR's worldwide report coverage. It is sold by the American Institute of Aeronautics and Astronautics, 750 Third Avenue, New York, N. Y. 10017. Annual subscription price, $25 postpaid, United States and possessions; foreign countries, $33 postpaid.

STAR

12 000 pounds (22 200 - 26 688 or 53 778 newtons) depending on the wheel configuration. Some tests were also made with a simulated wing flap mounted to the rear of the wheels in the take-off and landing positions. In addition, a few tests were made with a spray alleviator mounted between the wheels of the dual tandem wheel configuration. Results indicated that ground speed, vertical load, tire pressure, fluid density, fluid depth, and wheel location affected the fluid displacement drag, the wheel spin down characteristics, the wheel spray patterns, and the fluid spray drag developed by the landing gear. Author

N66-31210* # National Aeronautics and Space Administration Langley Research Center, Langley Station, Va.
EXPERIMENTS ON THE EFFECTS OF ATMOSPHERIC REFRACTION AND AIRPLANE ACCELERATIONS ON SONIC-BOOM GROUND-PRESSURE PATTERNS
Domenic J. Maglieri and David A. Hilton (NASA Flight Res. Center) Washington, NASA, Jul. 1966. 33 p. refs.
(NASA TN D-3520) CFSTI: HC $2.00/MF $0.50 CSCL 01B

A special series of sonic boom flight tests has been conducted with a fighter airplane in the altitude range from 33 500 to 52 500 feet (10 211 to 15 911 meters) at Mach numbers to 2.0 in an attempt to define better the lateral extent of the sonic boom pressure pattern during steady supersonic flight and the supersonic and multiple-boom regions during accelerated flight for quiescent atmospheric conditions. Ground pressure measurements have been obtained for lateral distances up to about 36 miles (58 315 meters) to each side of the flight track during the steady-level flight conditions and for distances of about 23 miles (37 007 meters) along the flight track for the acceleration and low Mach number steady-level flights. The lateral spread phenomena appear to be fairly well understood and predictable for current and future supersonic airplanes. The highest overpressures are measured on the ground track and decrease with increasing lateral distance. Pressure buildups occur in the supersonic region for longitudinal accelerations at constant altitude and these are followed by a region of multiple booms wherein the pressures are of the order of magnitude predicted for comparative steady level flight conditions. Author

03 AUXILIARY SYSTEMS

Includes fuel cells, energy conversion cells, and solar cells, auxiliary gas turbines, hydraulic, pneumatic and electrical systems, actuators, and motors. For related information see also 09 Electronic Equipment, 22 Nuclear Engineering and 18 Propulsion Systems.

N66-[illegible] American Cyanamid Co., Stamford, Conn. Research Labs.
HYDROGENATION FUEL CELL ELECTRODES. Progress Rept. A, Jul. 16, 1965-Jan. 16, 1966
V. Corso Jr. 22 Apr. 1966. 52 p. ref.
(Contract DA-44-009 AMC 697(T))
(PR 2 AD-632631) CFSTI: HC $3.00/MF $0.50

Progress is reported on a program aimed at the development of an electrode system which will produce 20 w/sq ft at a minimum of 0.6 volt in a phosphoric acid matrix type cell utilizing a liquid hydrocarbon fuel (n-octane) and air with a total platinum loading of not more than 20 g/sq ft. Emphasis was placed on evaluating the performance of standard and experimental electrodes on normal octane and air at temperatures in the range 110 to 200°C. Author (TAB)

N66-[illegible] Harry Diamond Labs., Washington, D. C.
HADOPAD RADAR ACTUATOR DESIGN AND PERFORMANCE
John J. Reach and Malcolm L. Wisser, Jr. Feb. 1966. 52 p. refs.
(TM 66-2 AD-632672) CFSTI: HC $3.00/MF $0.75

A low cost radar actuator for use as a component in a delayed opening parachute flare delivery system has been developed. This device is known as HADOPAD (High Altitude Delayed Opening Parachute Actuating Device). The device based on radar principles will open a main recovery parachute at either of two preset heights (1200 or 1700 ft) above the ground. The complete system utilizes a drogue parachute stabilizing stage for free fall from high altitude, followed by a main parachute recovery stage which is initiated at low altitude by the radar actuator. Limited field testing of the radar actuator at Fort Devens, Mass., has shown the feasibility of the device as a parachute actuator but some additional engineering and complete environmental tests are necessary before initiation of quantity production. Forty actuators were constructed by HDL during the research and development phase. Author (TAB)

N66-[illegible] Gulton Industries Inc., Metuchen, N. J.
INVESTIGATION OF STERILIZATION OF SECONDARY BATTERIES. Quarterly Progress Report No. 1, Oct. 26, 1965-Jan. 26, 1966
John Lieke (1966) 23 p.
(Contract NAS1-5708)
(NASA-CR-66106) CFSTI: HC $1.00/MF $0.50 CSCL 10C

Separator materials were evaluated for use in a sterilized nickel-cadmium cell which will have a power density and cycle life approximately the same as a standard Ni-Cd cell. Very little change in length or width of asbestos cloth was noted after testing (soaking to 145°C for 28 hours in a sealed container while being immersed in a potassium hydroxide solution). The asbestos material was lighter in color and more brittle after testing and there was a large decrease in the weight and thickness. Approximately the same results were obtained in both 30% and 40% KOH. Various other separator materials were tested and the resulting shrinkages in polypropylene and polypropylene-nylon separators were sufficiently pronounced to prevent wrapping of packs prior to heat sterilization. It was found that a sterilization procedure can be employed as a pre-treatment for these separators prior to cell wrapping. Fabrication and preliminary testing are reported for cells with separators of asbestos, polypropylene and polypropylene-nylon. M.W.R.

N66-[illegible] Air Force Inst. of Tech., Wright-Patterson AFB, Ohio. School of Engineering
A STUDY OF THE EFFECTS OF ENVIRONMENTAL NOISE ON THE PERFORMANCE OF FLUID AMPLIFIERS
Charles Jasper Hanson (M.S. Thesis) Mar. 1966. 44 p. refs.
(AD-632390) CFSTI: HC $2.00/MF $0.50

The effects of environmental noise on the static performance of two bistable fluid amplifiers were studied. Plots of differential control pressure versus differential output pressure were made by varying input pressure to one control port. In addition to sound frequency and pressure level, variables considered included amplifier configuration, order [illegible] and

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NATIONAL AERONAUTICS AND

12 000 pounds (22 203 26 688 or 53 778 newtons) de-
pending on the wheel configuration. Some tests were dive
made with a simulated entry flap mounted to the rear of the
wheels in the take off and landing positions. In addition, a
few tests were made with a spray deflector mounted behind
the wheels of the dual tandem wheel configuration. Results
indicated that ground speed, vertical load, tire pressure, fluid
density, fluid depth, and wheel location affected the fluid
displacement drag, the wheel spindown characteristics, the
wheel spray patterns, and the fluid spray drag developed by
the landing gear. Author

N66 31319*# National Aeronautics and Space Administration
Langley Research Center, Langley Station, Va.
EXPERIMENTS ON THE EFFECTS OF ATMOSPHERIC
REFRACTION AND AIRPLANE ACCELERATIONS ON
SONIC BOOM GROUND PRESSURE PATTERNS
Domenic J. Maglieri and David A. Hilton (NASA Flight Res.
Center) Washington NASA, Jul 1966 33p refs
(NASA TN D-3620) (CSTI: HC $2.00/MF $0.50 CSCL 01B)

A special series of sonic boom flight tests has been con-
ducted with a fighter airplane in the altitude range from
33 500 to 52 500 feet (10 211 to 15 911 meters) at Mach
numbers to 2.0 in an attempt to define better the lateral
extent of the sonic boom pressure pattern during steady
supersonic flight and the supersonic and multiple boom
regions during accelerated flight for outbound atmospheric
conditions. Ground pressure measurements have been ob-
tained for lateral distances up to about 35 miles (56 215
meters) to each side of the flight track during the steady
level flight conditions and for distances of about 23 miles
(37 007 meters) along the flight track for the acceleration
and low Mach number steady level flights. The lateral
spread phenomena appear to be fairly well understood and
predictable for current and future supersonic airplanes. The
highest overpressures are encountered on the ground track
and decrease with increasing lateral distance. Pressure
buildups occur in the supersonic region for longitudinal
accelerations at constant altitude and these are followed by a
region of multiple booms whenever the pressures are of the
order of magnitude predicted for comparative steady level
flight conditions. Author

03 AUXILIARY SYSTEMS

Includes fuel cells, energy conversion units, and water units. Includes gas turbines, hydraulic, pneumatic and electrical systems, actuators, and inverters. For related information see also 09 Electronic Equipment, 22 Nuclear Engineering, and 18 Propulsion Systems.

N66 30080# American Cyanamid Co. Stamford, Conn. Re-
search Labs.
HYDROCARBON FUEL CELL ELECTRODES. Progress
Report, Jul 16, 1965-Jan 15, 1966
J. Carse, Jr. 22 Apr 1966 62p refs
(Contract DA-44-009-AMC-897-T)
(PR 2) AD 632531 (CSTI: HC $3.00/MF $0.50)

Progress is reported on a program aimed at the develop-
ment of an electrode system which will produce 70 to 90 ma
at a minimum of 0.4 volt on a phosphoric acid matrix fuel
cell utilizing a liquid hydrocarbon fuel in electric and en-
[illegible]

N66 30086# Mary Dimmick Corp. Washington, D.C.
HADOPAD RADAR ACTUATOR DESIGN AND PERFORM-
ANCE
John J. Reich and Malcolm L. Wright, Feb 1966 51p refs
(AD 632572) (CSTI: HC $3.00/MF $0.50)

A low cost radar actuator for use on a component of a
delayed opening parachute heat dynamic system has been
developed. The device is known as HADOPAD (High Altitude
Delayed Opening Parachute Actuator Device). The device
based on radar principles will open a parachute automatically
at a time or at two preset heights (1300 or 7500 ft above the
ground). The complete system utilizes a [illegible]
stabilizing stage for free fall from high altitude followed by
a main parachute recovery stage which is initiated at some
altitude by the radar actuator. Limited field testing of the
radar actuator at Fort Devens, Mass. has shown the feasibi-
lity of the device as a parachute actuator but some additional
engineering and complete environmental tests are necessary
before initiation of quantity production. Two actuators were
constructed by MDC during the research and development
phase. Author (TAB)

N66 30077*# Gulton Industries, Inc. Metuchen, N.J.
INVESTIGATION OF STERILIZATION OF SECONDARY
BATTERIES. Quarterly Progress Report No. 1, Oct. 26,
1965-Jan. 26, 1966
Jean Lund (1966) 23p
(Contract NAS1-5728)
(NASA CR-64184) (CSTI: HC $1.00/MF $0.50 CSCL 10A)

Substrate materials were evaluated for use in a sintered
nickel-cadmium cell which will have a power density and life
the approximately the same as a standard Ni-Cd cell. Very
little change in length or width of substrate cells were noted
after testing (heating to 145°C for 36 hours) [illegible]
36 hrs. while being immersed in a potassium hydroxide solu-
tion. The substrate material was lighter in color and more
brittle after testing and there was a large decrease in the
weight and thickness. Approximately the same results were
obtained in both 34% and 40% KOH. Various other substrate
materials were tested and the resulting phenomena in poly
propylene and polyethylene noted separators were suff-
ciently pronounced to prevent employing of polyethylene in heat
sterilization. It was found that a 5% dextran solution can be
employed as a pre treatment for these battery stacks prior to
cell assembly. Post-carbon and preliminary testing are re-
quired for some basic separators of substrate polypropylene
and polyethylene nylon. Author

N66 30143# Air Force Inst. of Tech. Wright-Patterson AFB,
Ohio. School of Engineering
A STUDY OF THE EFFECTS OF ENVIRONMENTAL NOISE
ON THE PERFORMANCE OF FLUID AMPLIFIERS
Charles Joseph Hansen (M.S. Thesis) Mar 1966 44p refs
(AD 632286) (CSTI: HC $2.00/MF $0.50)

The effects of environmental noise on the [illegible]
and of two bistable fluid amplifiers were studied. The [illegible]
different [illegible] were [illegible] by varying [illegible] pressure [illegible]
addition to sound frequency and [illegible] were
[illegible] matched amplifier [illegible]

02

A66-39230

A66-39280

A66-39409

A66-39601 *

A66-39603 *

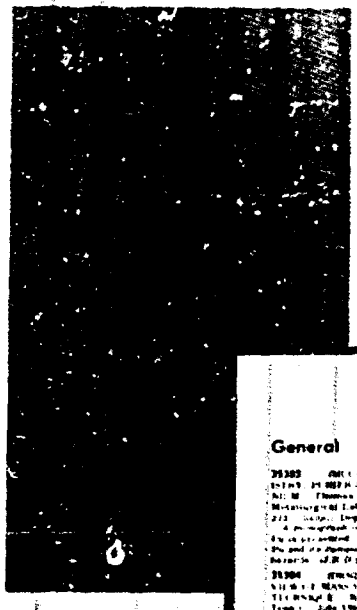
02 AIRCRAFT

A66-39401

A66-39500

Atomic Energy Commission

Nuclear Science Abstracts covers the international literature on nuclear science and technology and provides the only comprehensive abstracting and indexing of this body of information. Published twice each month since 1947, NSA covers technical reports of the U. S. Atomic Energy Commission and its contractors, technical reports of U. S. Government agencies and other governments, universities, industrial and research organizations, as well as patents, books, and journal literature on a world-wide basis. The subject matter covered in NSA is described in TID-4552, Subject Scope of Nuclear Science Abstracts, available free from the U. S. Atomic Energy Commission, Division of Technical Information Extension, P. O. Box 62, Oak Ridge, Tennessee 37830. NSA is available on a subscription basis from the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. 20402; for the regular 24 issues a year, $30.00 domestic; $37.00 foreign.

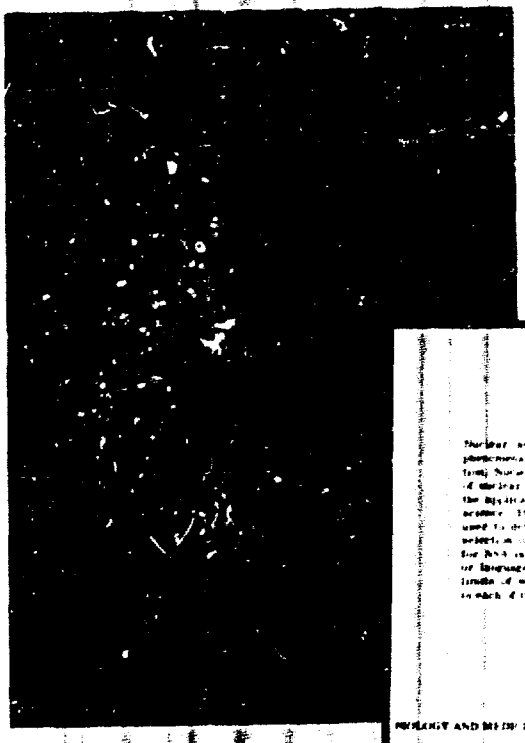


CHEMISTRY

General

Analytical Procedures

See also Separation Processes and Procedures



SUBJECT SCOPE OF NUCLEAR SCIENCE ABSTRACTS

[illegible]

Subject Fields of Interest

BIOLOGY AND MEDICINE

Biological studies of radioactive materials

Metabolism, tissue distribution and biochemistry of all radioisotopes, of the actinides, rare earths, actinoids, and of the fission product elements strontium, iodine, barium, and cesium

Radiation effects studies (particle, x ray, gamma ray, and ultrasonic) in all fields of biology, including genetic and third generation effects

Radiation hazards and protection

Radiation dosimetry

Radiotherapy and radiodiagnosis only if new equipment or techniques are used or if radiation side effects are discussed

Tracer studies if the tracer flow is the object of study or if the information on the tracer technique is new

CHEMISTRY

All chemistry of actinide or transuranium [illegible] products and of actinides including actinoids

Analysis, determination, and separation of the actinides including lanthanide

Chemical methods for separating isotopes

Chemical studies of reactor materials, fuels, moderators, coolants, and structural materials or of other accelerator materials, such as lens, shielding, or transport accelerator

Chemistry involved in the preparation and use of radioisotope targets

Chemistry of [illegible] of nuclear [illegible] including preparation of enriched [illegible]

Chemistry of radioactive waste [illegible], storage, and disposal

National Library of Medicine

The National Library of Medicine of the U. S. Department of Health, Education, and Welfare is the world's largest research library in a single scientific and professional field. NLM's bibliographies, indexes, catalogs, and other guides to medical literature can be purchased from the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. 20402.

Among NLM's publications is Index Medicus, a monthly bibliographic listing of references to current articles from approximately 2400 of the world's biomedical journals. Each issue contains subject and name sections and a separate Bibliography of Medical Reviews. Price: $40 annual subscription ($49 foreign).

Science Information Exchange

The Science Information Exchange, Smithsonian Institution, furnishes reports on current research planned or in progress, thereby bridging the gap between the start of projects and their subsequent publication one to several years later.

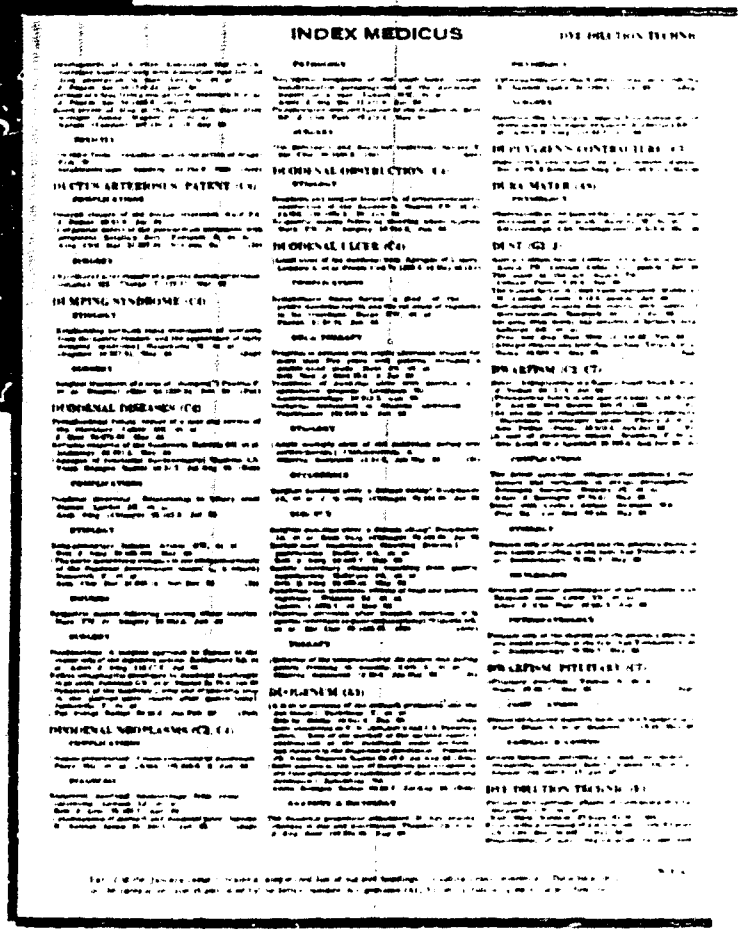
More than 100,000 summaries of unpublished research plans reporting who is doing what, where, and how supported reach SIE yearly from Federal, State and private agencies, foundations, associations, industries and individual investigators. The scope embraces all basic and applied fields of the life, social, physical, and engineering sciences.

Notice of Research Project

Each SIE report contains six items of information: the name of the agency supporting the research, a short title, names of all investigators, location of the work, a 200-word summary of the work in progress, and the level of effort.

Any research worker in a recognized scientific laboratory—government, academic, or industrial—may use the services of the Scientific Information Exchange without charge by writing to the address below. Most individual queries concern who is currently working on problems in the questioner's special field of interest. The address: Science Information Exchange, Smithsonian Institution, Madison National Bank Building, Suite 300, 1730 M Street, N. W., Washington, D. C. 20036.

Index Medicus



SUPPORTING AGENCY

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT
SCIENCE INFORMATION EXCHANGE
SMITHSONIAN INSTITUTION
U. S. Department of
HEALTH, EDUCATION, AND WELFARE
Public Health Service 1 R01

SIE NO. MH 10731-01
AGENCY NO. EPB (Nov. 64)

SUPPORTING AGENCY:

TITLE OF PROJECT:

Basic Factors in Human Salivary Conditioning ← TITLE

WHO

Names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.

Clinton Carl Brown, Ph.D., Assist. Professor of Medical Psychiatry, Pavlovian Laboratory, Johns Hopkins Hospital, Baltimore, Maryland

George F. Sutherland, M.D., Director of Psychiatric Education, Rosewood State Hospital, Owings Mill, Maryland

Albert A. Kurland, M.D., Director of Research, Department of Mental Hygiene, Baltimore, State of Maryland

NAME AND ADDRESS OF INSTITUTION:

Friends of Psychiatric Research, Inc. ← WHERE
Spring Grove State Hospital, Baltimore, Maryland 21228

SUMMARY OF PROPOSED WORK – (200 words or less.) – In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

WHAT

This study is a critical evaluation of the potential utility of the conditional salivary response for the evaluation of more complex behavior in human subjects.

While there is a considerable literature concerning the response in various dental, physiological, chemical and pharmacological applications, there is little evidence relating to its basic unconditional aspects, particularly as it reflects the activity of the parasympathetic branch of the autonomic nervous system.

The planned research calls for a step-wise progression from the evaluation of the basic aspects of the response to an exploration of its correlates to other established psychophysiologic measures of ANS activity.

This laboratory is particularly well equipped to undertake this type of investigation on the basis of having developed a precise and reliable procedure for the measurement of salivary flow in man and because of the availability of personnel who are experienced in conditional reflex investigation and conversant with the related literature.

The results of the projected study should provide conclusive evidence of the utility of the conditional salivary response as an established psychophysiologic measurement.

Period for this NRP
5-65 to 4-66
mo yr mo yr
Sub-group 2 1

← WHEN

SIGNATURE OF PRINCIPAL INVESTIGATOR Clinton C. Brown Ph.D.

PROFESSIONAL SCHOOL (medical, graduate, etc.)

Proj. No. MH 10731-1 -2

Period 3/65 - 4/66

Amount → HOW MUCH

The National Referral Center for Science and Technology

The National Referral Center for Science and Technology may be described most simply as an "information desk" for the scientific and technical community. Operating in the Library of Congress with the support of the National Science Foundation, the Center is designed to provide a single place to which anyone with an interest in science and technology may turn for advice on where and how to obtain information on specific topics.

The Center does not provide technical details in answer to inquiries, nor does it furnish bibliographic assistance. Functioning as an intermediary, it directs those who have a question concerning a particular subject to organizations or individuals with specialized knowledge of that subject.

Three directories covering a broad range of information resources have been issued by the Center and may be purchased from the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. 20402:

A Directory of Information Resources in the United States: Physical Sciences, Biological Sciences, Engineering ($2.25)

A Directory of Information Resources in the United States: Social Sciences ($1.50)

A Directory of Information Resources in the United States: Water ($1.50)

Correspondence concerning the Center should be addressed to:

National Referral Center for Science and Technology
Library of Congress
Washington, D. C. 20540

A Directory of Information Resources in the United States

National Referral Center

AMERICAN ASSOCIATION ON MENTAL DEFICIENCY

1601 West Broad Street
Columbus, Ohio 43223
Telephone: 279-4651 (Area code: 614)

The American Association on Mental Deficiency, under contract to the National Clearinghouse for Mental Health Information, is in the process of developing a documentation service on mental retardation and publishing a quarterly journal entitled *Mental Retardation Abstracts*. Each issue of the *Abstracts*, distributed by the U.S. Department of Health, Education, and Welfare, will include 300 abstracts on the world literature dealing with mental retardation. Inquiries concerning the documentation service or subscriptions to *Mental Retardation Abstracts* should be directed to the Association.

The *American Journal of Mental Deficiency* and *Mental Retardation*, bimonthly publications, are available to nonmembers on subscription.

AMERICAN ASTRONAUTICAL SOCIETY

516 Fifth Avenue
New York, N.Y. 10036
Telephone: 682-3383 (Area code: 212)

A professional society, the American Astronautical Society maintains a collection of books, journals, and data on various aspects of the space sciences. Subject coverage is astronautics, spacecraft, space flight, space environment, guidance, control, astrodynamics, bioastronautics, navigation, propulsion, orbits and trajectories, solar physics, radiation, planetary environment, flight mechanics, and space medicine.

Technical inquiries are answered without charge. Society publications available for purchase are: *Journal of the Astronautical Sciences*, issued quarterly, and *Advances in the Astronautical Sciences*, AAS proceedings issued in about three volumes each year. Back issues of these publications and copies of the *Astronautical Sciences Review*, a discontinued series, are available from Western Periodicals, Inc., 13000 Raymer Street, North Hollywood, Calif., 91605. A bimonthly *Newsletter* is distributed to members.

AMERICAN BIO-SYNTHETICS CORP.

710 West National Avenue
Milwaukee, Wis. 53201
Telephone: 384-7017 (Area code: 414)

An industrial research organization, the American Bio-Synthetics Corp. conducts research in the agricultural, biological and pharmaceutical sciences, general and polymer chemistry; engineering; plastics, and resins. Special areas of interest include automated distillation equipment, proteins, peptides, amino acids, and hormone research. Pilot plants are maintained for the experimental production of commercially unobtainable peptides, enzymes, hormonal preparations, gland extracts, and animal and human body fluids. Chemical, bacteriological, physical, and environmental testing services are provided to Government and industry.

A library of books, journals, reports, patents and films and photos is maintained on chemistry, biochemistry, and microbiology. There are also complete files of current Government tests and specifications for various materials. Reference and document services are restricted to company personnel, however, inter-library cooperation is encouraged.

AMERICAN BUREAU OF METAL STATISTICS

50 Broadway
New York, N.Y. 10004
Telephone: 944-1870 (Area code: 212)

A nonprofit trade association supported by producers of copper, lead, and zinc in the United States, Canada, Mexico, Chile, and Peru, the Bureau compiles and releases statistics on the economics of nonferrous minerals and metals.

The *Year Book*, which provides statistical information for market analysis, research, and industry surveys, may be purchased. Monthly and quarterly statistical reports may be obtained on a subscription basis, and are issued as *Copper Series*, *Lead Series*, *Zinc Series*, *Aluminum Series*, *Gold Series*, and *Silver Series*.

AMERICAN CAMELLIA SOCIETY

Coastal Plain Experiment Station
Box 465
Tifton, Ga. 31794
Telephone: 382-5561 (Area code: 912)

In collaboration with the Coastal Plain Experiment Station and other research organizations, the Society promotes interest in genus Camellia. It encourages scientific research in its culture and pest control, effects standardization of its varietal names and [illegible] of new varieties, and disseminates information [illegible] concerning these activities.

The Society library collections of books, [illegible] reports, films, photographs, and data are available

Report Formats

Reports are normally available in the conventional form of printed pages. Most U. S. Government reports are also available today in a newer format, microfiche, a piece of transparent film, measuring 105 mm × 148 mm (approximately 4 in. × 6 in.), which can contain up to 72 page images (in reduced form) of a printed report. Using this format, the equivalent of millions of sheets of paper can be stored in a few drawers or file cabinets.

Small, portable microfiche readers are available at low cost ($100 to $135). These project an image of the report on ground glass; the image is larger than the original. If a "hard copy" (photo reproduction) of a page, table, chart, or the entire report is wanted, then a reader-printer is used. Reader-printers are available in the price range of $750 to $1500.

Some representative examples of commercially available readers and reader-printers are listed below. Please remember that the Government does not evaluate the relative merits of these equipments.

Portable and Semi-Portable Microfiche Readers

Atlantic Microfilm Corporation Spring Valley, New York 10977	(Model F66)
Bell and Howell Company Microphoto Division 1700 Shaw Avenue Cleveland, Ohio 44112	(several models)
Documat, Incorporated Waltham, Massachusetts 02154	(several models)
Documentation, Incorporated Microdocumentation Division 4833 Rugby Avenue Bethesda, Maryland 20014	(Model 1010)
DuKane Corporation St. Charles, Illinois 60174	(Model No. 576-95)

Using microfiche, a 100-page printed report can be placed on two 4-in. x 6-in. cards.

Frederick Post Company P. O. Box 803, Department 50 Chicago, Illinois 60690	(Model No. 620-00)
Microcard Corporation 365 South Oak Street West Salem, Wisconsin 54669	(Model FR-5)
Recordak Corporation 770 Broadway New York, New York 10003	(several models)
University Microfilms, Incorporated 313 North First Street Ann Arbor, Michigan 48107	

Heavy-Duty Reader-Printers

Bell and Howell Company (address on preceding page)	(several models)
Documat Incorporated (address on preceding page)	(several models)
Microfilm Products Division 3 M Company St. Paul, Minnesota 55119	(Filmac 100 to 400)
Recordak Corporation (address given above)	(several models)